

NODE=B065

N(1680) 5/2⁺

$$I(J^P) = \frac{1}{2}(\frac{5}{2}^+) \text{ Status: } ***$$

Most of the results published before 1975 were last included in our 1982 edition, Physics Letters **111B** 1 (1982). Some further obsolete results published before 1984 were last included in our 2006 edition, Journal of Physics, G **33** 1 (2006).

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N(1680) BREIT-WIGNER MASS

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
1680 to 1690 (\approx 1685) OUR ESTIMATE			
1689 \pm 6	ANISOVICH	12A	DPWA Multichannel
1680.1 \pm 0.2	ARNDT	06	DPWA $\pi N \rightarrow \pi N, \eta N$
1680 \pm 10	CUTKOSKY	80	IPWA $\pi N \rightarrow \pi N$
1684 \pm 3	HOEHLER	79	IPWA $\pi N \rightarrow \pi N$
• • • We do not use the following data for averages, fits, limits, etc. • • •			
1682.7 \pm 0.5	SHRESTHA	12A	DPWA Multichannel
1685 \pm 5	ANISOVICH	10	DPWA Multichannel
1680 \pm 7	BATINIC	10	DPWA $\pi N \rightarrow N\pi, N\eta$
1684 \pm 8	THOMA	08	DPWA Multichannel
1683.2 \pm 0.7	ARNDT	04	DPWA $\pi N \rightarrow \pi N, \eta N$
1679 \pm 3	VRANA	00	DPWA Multichannel
1679 \pm 5	ARNDT	96	IPWA $\gamma N \rightarrow \pi N$
1678	ARNDT	95	DPWA $\pi N \rightarrow N\pi$
1684 \pm 4	MANLEY	92	IPWA $\pi N \rightarrow \pi N & N\pi\pi$
1660	¹ LONGACRE	77	IPWA $\pi N \rightarrow N\pi\pi$
1670	² LONGACRE	75	IPWA $\pi N \rightarrow N\pi\pi$

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N(1680) BREIT-WIGNER WIDTH

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
120 to 140 (\approx 130) OUR ESTIMATE			
118 \pm 6	ANISOVICH	12A	DPWA Multichannel
128.0 \pm 1.1	ARNDT	06	DPWA $\pi N \rightarrow \pi N, \eta N$
120 \pm 10	CUTKOSKY	80	IPWA $\pi N \rightarrow \pi N$
128 \pm 8	HOEHLER	79	IPWA $\pi N \rightarrow \pi N$
• • • We do not use the following data for averages, fits, limits, etc. • • •			
126 \pm 1	SHRESTHA	12A	DPWA Multichannel
117 \pm 12	ANISOVICH	10	DPWA Multichannel
142 \pm 7	BATINIC	10	DPWA $\pi N \rightarrow N\pi, N\eta$
105 \pm 8	THOMA	08	DPWA Multichannel
134.4 \pm 3.8	ARNDT	04	DPWA $\pi N \rightarrow \pi N, \eta N$
128 \pm 9	VRANA	00	DPWA Multichannel
124 \pm 4	ARNDT	96	IPWA $\gamma N \rightarrow \pi N$
126	ARNDT	95	DPWA $\pi N \rightarrow N\pi$
139 \pm 8	MANLEY	92	IPWA $\pi N \rightarrow \pi N & N\pi\pi$
150	¹ LONGACRE	77	IPWA $\pi N \rightarrow N\pi\pi$
130	² LONGACRE	75	IPWA $\pi N \rightarrow N\pi\pi$

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N(1680) POLE POSITION

REAL PART VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
1665 to 1680 (\approx 1675) OUR ESTIMATE			
1676 \pm 6	ANISOVICH	12A	DPWA Multichannel
1674	ARNDT	06	DPWA $\pi N \rightarrow \pi N, \eta N$
1673	³ HOEHLER	93	ARGD $\pi N \rightarrow \pi N$
1667 \pm 5	CUTKOSKY	80	IPWA $\pi N \rightarrow \pi N$

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• • • We do not use the following data for averages, fits, limits, etc. • • •

1669	SHRESTHA	12A	DPWA	Multichannel
1672±4	ANISOVICH	10	DPWA	Multichannel
1666±8	BATINIC	10	DPWA	$\pi N \rightarrow N\pi, N\eta$
1674±5	THOMA	08	DPWA	Multichannel
1678	ARNDT	04	DPWA	$\pi N \rightarrow \pi N, \eta N$
1667	VRANA	00	DPWA	Multichannel
1670	ARNDT	95	DPWA	$\pi N \rightarrow N\pi$
1670	ARNDT	91	DPWA	$\pi N \rightarrow \pi N$ Soln SM90
1668 or 1674	⁴ LONGACRE	78	IPWA	$\pi N \rightarrow N\pi\pi$
1656 or 1653	¹ LONGACRE	77	IPWA	$\pi N \rightarrow N\pi\pi$

-2xIMAGINARY PART

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
110 to 135 (≈ 120) OUR ESTIMATE			

113± 4	ANISOVICH	12A	DPWA	Multichannel
115	ARNDT	06	DPWA	$\pi N \rightarrow \pi N, \eta N$
135	³ HOEHLER	93	ARGD	$\pi N \rightarrow \pi N$
110±10	CUTKOSKY	80	IPWA	$\pi N \rightarrow \pi N$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
119	SHRESTHA	12A	DPWA	Multichannel
114±12	ANISOVICH	10	DPWA	Multichannel
135± 6	BATINIC	10	DPWA	$\pi N \rightarrow N\pi, N\eta$
95±10	THOMA	08	DPWA	Multichannel
120	ARNDT	04	DPWA	$\pi N \rightarrow \pi N, \eta N$
122	VRANA	00	DPWA	Multichannel
120	ARNDT	95	DPWA	$\pi N \rightarrow N\pi$
116	ARNDT	91	DPWA	$\pi N \rightarrow \pi N$ Soln SM90
132 or 137	⁴ LONGACRE	78	IPWA	$\pi N \rightarrow N\pi\pi$
145 or 143	¹ LONGACRE	77	IPWA	$\pi N \rightarrow N\pi\pi$

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N(1680) ELASTIC POLE RESIDUE

MODULUS |r|

VALUE (MeV)	DOCUMENT ID	TECN	COMMENT
40±5 OUR ESTIMATE			

43±4	ANISOVICH	12A	DPWA	Multichannel
42	ARNDT	06	DPWA	$\pi N \rightarrow \pi N, \eta N$
44	HOEHLER	93	ARGD	$\pi N \rightarrow \pi N$
34±2	CUTKOSKY	80	IPWA	$\pi N \rightarrow \pi N$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
44	BATINIC	10	DPWA	$\pi N \rightarrow N\pi, N\eta$
43	ARNDT	04	DPWA	$\pi N \rightarrow \pi N, \eta N$
40	ARNDT	95	DPWA	$\pi N \rightarrow N\pi$
37	ARNDT	91	DPWA	$\pi N \rightarrow \pi N$ Soln SM90

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PHASE θ

VALUE (°)	DOCUMENT ID	TECN	COMMENT
-10±10 OUR ESTIMATE			

- 2±10	ANISOVICH	12A	DPWA	Multichannel
- 4	ARNDT	06	DPWA	$\pi N \rightarrow \pi N, \eta N$
- 17	HOEHLER	93	ARGD	$\pi N \rightarrow \pi N$
- 25± 5	CUTKOSKY	80	IPWA	$\pi N \rightarrow \pi N$
• • • We do not use the following data for averages, fits, limits, etc. • • •				
- 19	BATINIC	10	DPWA	$\pi N \rightarrow N\pi, N\eta$
1	ARNDT	04	DPWA	$\pi N \rightarrow \pi N, \eta N$
+ 1	ARNDT	95	DPWA	$\pi N \rightarrow N\pi$
- 14	ARNDT	91	DPWA	$\pi N \rightarrow \pi N$ Soln SM90

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N(1680) INELASTIC POLE RESIDUE

The "normalized residue" is the residue divided by $\Gamma_{pole}/2$.

Normalized residue in $N\pi \rightarrow N(1680) \rightarrow \Delta\pi, P\text{-wave}$

MODULUS (%)	PHASE (°)	DOCUMENT ID	TECN	COMMENT
15±3	-70 ± 45	ANISOVICH	12A	DPWA Multichannel

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NODE=B065RS1

NODE=B065RS1

Normalized residue in $N\pi \rightarrow N(1680) \rightarrow \Delta\pi, F\text{-wave}$

<u>MODULUS (%)</u>	<u>PHASE (°)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
23±4	85 ± 15	ANISOVICH	12A DPWA	Multichannel

NODE=B065RS2

NODE=B065RS2

Normalized residue in $N\pi \rightarrow N(1680) \rightarrow N(\pi\pi)_{S\text{-wave}}^{I=0}$

<u>MODULUS (%)</u>	<u>PHASE (°)</u>	<u>DOCUMENT ID</u>	<u>TECN</u>	<u>COMMENT</u>
26±4	-56 ± 15	ANISOVICH	12A DPWA	Multichannel

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NODE=B065RS3

 $N(1680)$ DECAY MODES

The following branching fractions are our estimates, not fits or averages.

Mode	Fraction (Γ_i/Γ)
$\Gamma_1 N\pi$	65–70 %
$\Gamma_2 N\eta$	(0.0±1.0) %
$\Gamma_3 \Lambda K$	
$\Gamma_4 \Sigma K$	
$\Gamma_5 N\pi\pi$	30–40 %
$\Gamma_6 \Delta\pi$	5–15 %
$\Gamma_7 \Delta(1232)\pi, P\text{-wave}$	(10 ± 5) %
$\Gamma_8 \Delta(1232)\pi, F\text{-wave}$	0–12 %
$\Gamma_9 N\rho$	3–15 %
$\Gamma_{10} N\rho, S=1/2, F\text{-wave}$	
$\Gamma_{11} N\rho, S=3/2, P\text{-wave}$	<12%
$\Gamma_{12} N\rho, S=3/2, F\text{-wave}$	1–5 %
$\Gamma_{13} N(\pi\pi)_{S\text{-wave}}^{I=0}$	(11 ± 5) %
$\Gamma_{14} p\gamma$	0.21–0.32 %
$\Gamma_{15} p\gamma, \text{ helicity}=1/2$	0.001–0.011 %
$\Gamma_{16} p\gamma, \text{ helicity}=3/2$	0.20–0.32 %
$\Gamma_{17} n\gamma$	0.021–0.046 %
$\Gamma_{18} n\gamma, \text{ helicity}=1/2$	0.004–0.029 %
$\Gamma_{19} n\gamma, \text{ helicity}=3/2$	0.01–0.024 %

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DESIG=2

DESIG=3

DESIG=4

DESIG=5;OUR EST

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DESIG=6;OUR EST

DESIG=7;OUR EST

DESIG=182;OUR EST

DESIG=8

DESIG=9;OUR EST

DESIG=10;OUR EST

DESIG=11;OUR EST

DESIG=184;OUR EST

DESIG=12;OUR EST

DESIG=13;OUR EST

DESIG=185;OUR EST

DESIG=14;OUR EST

DESIG=15;OUR EST

 $N(1680)$ BRANCHING RATIOS

$\Gamma(N\pi)/\Gamma_{\text{total}}$	Γ_1/Γ
<u>VALUE (%)</u>	<u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u>
65 to 70 OUR ESTIMATE	
64 ± 5	ANISOVICH 12A DPWA Multichannel
70.1± 0.1	ARNDT 06 DPWA $\pi N \rightarrow \pi N, \eta N$
62 ± 5	CUTKOSKY 80 IPWA $\pi N \rightarrow \pi N$
65 ± 2	HOEHLER 79 IPWA $\pi N \rightarrow \pi N$
• • • We do not use the following data for averages, fits, limits, etc. • • •	
68.0± 0.5	SHRESTHA 12A DPWA Multichannel
66 ± 8	ANISOVICH 10 DPWA Multichannel
67 ± 3	BATINIC 10 DPWA $\pi N \rightarrow N\pi, N\eta$
72 ± 15	THOMA 08 DPWA Multichannel
67.0± 0.4	ARNDT 04 DPWA $\pi N \rightarrow \pi N, \eta N$
69 ± 2	VRANA 00 DPWA Multichannel
68	ARNDT 95 DPWA $\pi N \rightarrow N\pi$
70 ± 3	MANLEY 92 IPWA $\pi N \rightarrow \pi N & N\pi\pi$

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$(\Gamma_i\Gamma_f)^{1/2}/\Gamma_{\text{total}}$ in $N\pi \rightarrow N(1680) \rightarrow N\eta$	$(\Gamma_1\Gamma_2)^{1/2}/\Gamma$
<u>VALUE</u>	<u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u>
• • • We do not use the following data for averages, fits, limits, etc. • • •	
not seen	BAKER 79 DPWA $\pi^- p \rightarrow n\eta$

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$\Gamma(N\eta)/\Gamma_{\text{total}}$	Γ_2/Γ
<u>VALUE (%)</u>	<u>DOCUMENT ID</u> <u>TECN</u> <u>COMMENT</u>
0 ± 1	
• • • We do not use the following data for averages, fits, limits, etc. • • •	
1.0 ± 0.3	SHRESTHA 12A DPWA Multichannel
0.4 ± 0.2	BATINIC 10 DPWA $\pi N \rightarrow N\pi, N\eta$
<1	THOMA 08 DPWA Multichannel
0.15 ^{+0.35} _{-0.10}	TIATOR 99 DPWA $\gamma p \rightarrow p\eta$

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NODE=B065R3

$(\Gamma_f \Gamma_f)^{1/2} / \Gamma_{\text{total}}$ in $N\pi \rightarrow N(1680) \rightarrow \Lambda K$

Coupling to ΛK not required in the analyses of SAXON 80 or BELL 83.

VALUE	DOCUMENT ID	TECN	COMMENT
• • • We do not use the following data for averages, fits, limits, etc. • • •			
-0.01	SHRESTHA	12A	DPWA Multichannel

 $(\Gamma_1 \Gamma_3)^{1/2} / \Gamma$

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Note: Signs of couplings from $\pi N \rightarrow N\pi\pi$ analyses were changed in the 1986 edition to agree with the baryon-first convention; the overall phase ambiguity is resolved by choosing a negative sign for the $\Delta(1620)$ S_{31} coupling to $\Delta(1232)\pi$.

 $(\Gamma_f \Gamma_f)^{1/2} / \Gamma_{\text{total}}$ in $N\pi \rightarrow N(1680) \rightarrow \Delta(1232)\pi, P\text{-wave}$

VALUE	DOCUMENT ID	TECN	COMMENT
-0.31 to -0.21 OUR ESTIMATE			
-0.27	1,5 LONGACRE	77	IPWA $\pi N \rightarrow N\pi\pi$
-0.25	2 LONGACRE	75	IPWA $\pi N \rightarrow N\pi\pi$
• • • We do not use the following data for averages, fits, limits, etc. • • •			
-0.26 ± 0.04	MANLEY	92	IPWA $\pi N \rightarrow \pi N \& N\pi\pi$

 $(\Gamma_1 \Gamma_7)^{1/2} / \Gamma$

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 $\Gamma(\Delta(1232)\pi, P\text{-wave}) / \Gamma_{\text{total}}$

VALUE (%)	DOCUMENT ID	TECN	COMMENT
10 ± 5 OUR ESTIMATE			
5 ± 3	ANISOVICH	12A	DPWA Multichannel
14 ± 3	VRANA	00	DPWA Multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •			
10.5 ± 0.9	SHRESTHA	12A	DPWA Multichannel
8 ± 3	THOMA	08	DPWA Multichannel

 Γ_7 / Γ

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 $(\Gamma_f \Gamma_f)^{1/2} / \Gamma_{\text{total}}$ in $N\pi \rightarrow N(1680) \rightarrow \Delta(1232)\pi, F\text{-wave}$

VALUE	DOCUMENT ID	TECN	COMMENT
+0.03 to +0.11 OUR ESTIMATE			
+0.07	1,5 LONGACRE	77	IPWA $\pi N \rightarrow N\pi\pi$
+0.08	2 LONGACRE	75	IPWA $\pi N \rightarrow N\pi\pi$
• • • We do not use the following data for averages, fits, limits, etc. • • •			
+0.07 ± 0.03	MANLEY	92	IPWA $\pi N \rightarrow \pi N \& N\pi\pi$

 $(\Gamma_1 \Gamma_8)^{1/2} / \Gamma$

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 $\Gamma(\Delta(1232)\pi, F\text{-wave}) / \Gamma_{\text{total}}$

VALUE (%)	DOCUMENT ID	TECN	COMMENT
0 to 12 (≈ 5) OUR ESTIMATE			
10 ± 3	ANISOVICH	12A	DPWA Multichannel
1 ± 1	VRANA	00	DPWA Multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •			
1.0 ± 0.1	SHRESTHA	12A	DPWA Multichannel
4 ± 3	THOMA	08	DPWA Multichannel

 Γ_8 / Γ

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 $(\Gamma_f \Gamma_f)^{1/2} / \Gamma_{\text{total}}$ in $N\pi \rightarrow N(1680) \rightarrow N\rho, S=3/2, P\text{-wave}$

VALUE	DOCUMENT ID	TECN	COMMENT
-0.30 to -0.10 OUR ESTIMATE			
-0.23	1,5 LONGACRE	77	IPWA $\pi N \rightarrow N\pi\pi$
-0.30	2 LONGACRE	75	IPWA $\pi N \rightarrow N\pi\pi$
• • • We do not use the following data for averages, fits, limits, etc. • • •			
-0.20 ± 0.05	MANLEY	92	IPWA $\pi N \rightarrow \pi N \& N\pi\pi$

 $(\Gamma_1 \Gamma_{11})^{1/2} / \Gamma$

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 $\Gamma(N\rho, S=3/2, P\text{-wave}) / \Gamma_{\text{total}}$

VALUE (%)	DOCUMENT ID	TECN	COMMENT
5 ± 1			
• • • We do not use the following data for averages, fits, limits, etc. • • •			
7.4 ± 0.7	SHRESTHA	12A	DPWA Multichannel

 Γ_{11} / Γ

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 $(\Gamma_f \Gamma_f)^{1/2} / \Gamma_{\text{total}}$ in $N\pi \rightarrow N(1680) \rightarrow N\rho, S=3/2, F\text{-wave}$

VALUE	DOCUMENT ID	TECN	COMMENT
-0.18 to -0.10 OUR ESTIMATE			
-0.15	1,5 LONGACRE	77	IPWA $\pi N \rightarrow N\pi\pi$
• • • We do not use the following data for averages, fits, limits, etc. • • •			
-0.13 ± 0.03	MANLEY	92	IPWA $\pi N \rightarrow \pi N \& N\pi\pi$

 $(\Gamma_1 \Gamma_{12})^{1/2} / \Gamma$

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$\Gamma(N\rho, S=3/2, F\text{-wave})/\Gamma_{\text{total}}$

VALUE (%)	DOCUMENT ID	TECN	COMMENT
3 ±1	VRANA 00	DPWA	Multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •			

2.4±0.3

 $(\Gamma_1\Gamma_f)^{1/2}/\Gamma_{\text{total}} \text{ in } N\pi \rightarrow N(1680) \rightarrow N(\pi\pi)_{S\text{-wave}}^{I=0}$

VALUE	DOCUMENT ID	TECN	COMMENT
+0.25 to +0.35 OUR ESTIMATE			
+0.31	^{1,5} LONGACRE 77	IPWA	$\pi N \rightarrow N\pi\pi$
+0.30	² LONGACRE 75	IPWA	$\pi N \rightarrow N\pi\pi$
• • • We do not use the following data for averages, fits, limits, etc. • • •			
+0.29±0.04	MANLEY 92	IPWA	$\pi N \rightarrow \pi N \& N\pi\pi$

 $\Gamma(N(\pi\pi)_{S\text{-wave}}^{I=0})/\Gamma_{\text{total}}$

VALUE (%)	DOCUMENT ID	TECN	COMMENT
11 ±5 OUR ESTIMATE			
14 ±7	ANISOVICH 12A	DPWA	Multichannel
9 ±1	VRANA 00	DPWA	Multichannel
• • • We do not use the following data for averages, fits, limits, etc. • • •			
9.4±0.8	SHRESTHA 12A	DPWA	Multichannel
11 ±5	THOMA 08	DPWA	Multichannel

N(1680) PHOTON DECAY AMPLITUDES

Papers on γN amplitudes predating 1981 may be found in our 2006 edition, Journal of Physics, G **33** 1 (2006).

 $N(1680) \rightarrow p\gamma$, helicity-1/2 amplitude $A_{1/2}$

VALUE ($\text{GeV}^{-1/2}$)	DOCUMENT ID	TECN	COMMENT
-0.015±0.006 OUR ESTIMATE			
-0.013±0.003	ANISOVICH 12A	DPWA	Multichannel
-0.007±0.002	WORKMAN 12A	DPWA	$\gamma N \rightarrow N\pi$
-0.017±0.001	DUGGER 07	DPWA	$\gamma N \rightarrow \pi N$
-0.017±0.018	CRAWFORD 83	IPWA	$\gamma N \rightarrow \pi N$
-0.009±0.006	AWAJI 81	DPWA	$\gamma N \rightarrow \pi N$
• • • We do not use the following data for averages, fits, limits, etc. • • •			
-0.017±0.001	SHRESTHA 12A	DPWA	Multichannel
-0.012±0.006	ANISOVICH 10	DPWA	Multichannel
-0.025	DRECHSEL 07	DPWA	$\gamma N \rightarrow \pi N$
-0.010±0.004	ARNDT 96	IPWA	$\gamma N \rightarrow \pi N$
-0.006±0.002	LI 93	IPWA	$\gamma N \rightarrow \pi N$

 $N(1680) \rightarrow p\gamma$, helicity-3/2 amplitude $A_{3/2}$

VALUE ($\text{GeV}^{-1/2}$)	DOCUMENT ID	TECN	COMMENT
+0.133±0.012 OUR ESTIMATE			
0.135±0.006	ANISOVICH 12A	DPWA	Multichannel
0.140±0.002	WORKMAN 12A	DPWA	$\gamma N \rightarrow N\pi$
0.134±0.002	DUGGER 07	DPWA	$\gamma N \rightarrow \pi N$
0.132±0.010	CRAWFORD 83	IPWA	$\gamma N \rightarrow \pi N$
0.115±0.008	AWAJI 81	DPWA	$\gamma N \rightarrow \pi N$
• • • We do not use the following data for averages, fits, limits, etc. • • •			
0.136±0.001	SHRESTHA 12A	DPWA	Multichannel
0.136±0.012	ANISOVICH 10	DPWA	Multichannel
0.134	DRECHSEL 07	DPWA	$\gamma N \rightarrow \pi N$
0.145±0.005	ARNDT 96	IPWA	$\gamma N \rightarrow \pi N$
0.154±0.002	LI 93	IPWA	$\gamma N \rightarrow \pi N$

 $N(1680) \rightarrow n\gamma$, helicity-1/2 amplitude $A_{1/2}$

VALUE ($\text{GeV}^{-1/2}$)	DOCUMENT ID	TECN	COMMENT
+0.029±0.010 OUR ESTIMATE			
0.026±0.004	CHEN 12A	DPWA	$\gamma N \rightarrow \pi N$
0.017±0.014	AWAJI 81	DPWA	$\gamma N \rightarrow \pi N$
0.032±0.003	FUJII 81	DPWA	$\gamma N \rightarrow \pi N$
• • • We do not use the following data for averages, fits, limits, etc. • • •			
0.029±0.002	SHRESTHA 12A	DPWA	Multichannel
0.028	DRECHSEL 07	DPWA	$\gamma N \rightarrow \pi N$
0.030±0.005	ARNDT 96	IPWA	$\gamma N \rightarrow \pi N$
0.022±0.002	LI 93	IPWA	$\gamma N \rightarrow \pi N$

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NODE=B065235

NODE=B065235

NODE=B065A1
NODE=B065A1
→ UNCHECKED ←

NODE=B065A2
NODE=B065A2
→ UNCHECKED ←

NODE=B065A3
NODE=B065A3
→ UNCHECKED ←

N(1680) → nγ, helicity-3/2 amplitude A_{3/2}

VALUE (GeV ^{-1/2})	DOCUMENT ID	TECN	COMMENT
-0.033±0.009 OUR ESTIMATE			
-0.029±0.002	CHEN	12A	DPWA $\gamma N \rightarrow \pi N$
-0.033±0.013	AWAJI	81	DPWA $\gamma N \rightarrow \pi N$
-0.023±0.005	FUJII	81	DPWA $\gamma N \rightarrow \pi N$
• • • We do not use the following data for averages, fits, limits, etc. • • •			
-0.059±0.002	SHRESTHA	12A	DPWA Multichannel
-0.038	DRECHSEL	07	DPWA $\gamma N \rightarrow \pi N$
-0.040±0.015	ARNDT	96	IPWA $\gamma N \rightarrow \pi N$
-0.048±0.002	LI	93	IPWA $\gamma N \rightarrow \pi N$

N(1680) FOOTNOTES

- ¹ LONGACRE 77 pole positions are from a search for poles in the unitarized T-matrix; the first (second) value uses, in addition to $\pi N \rightarrow N\pi\pi$ data, elastic amplitudes from a Saclay (CERN) partial-wave analysis. The other LONGACRE 77 values are from eyeball fits with Breit-Wigner circles to the T-matrix amplitudes.
- ² From method II of LONGACRE 75: eyeball fits with Breit-Wigner circles to the T-matrix amplitudes.
- ³ See HOEHLER 93 for a detailed discussion of the evidence for and the pole parameters of N and Δ resonances as determined from Argand diagrams of πN elastic partial-wave amplitudes and from plots of the speeds with which the amplitudes traverse the diagrams.
- ⁴ LONGACRE 78 values are from a search for poles in the unitarized T-matrix. The first (second) value uses, in addition to $\pi N \rightarrow N\pi\pi$ data, elastic amplitudes from a Saclay (CERN) partial-wave analysis.
- ⁵ LONGACRE 77 considers this coupling to be well determined.

N(1680) REFERENCES

For early references, see Physics Letters **111B** 1 (1982). For very early references, see Reviews of Modern Physics **37** 633 (1965).

ANISOVICH	12A	EPJ A48 15	A.V. Anisovich <i>et al.</i>	(BONN, PNPI)	REFID=54041
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ARNDT	95	PR C52 2120	R.A. Arndt <i>et al.</i>	(VPI, BRCO)	REFID=44535
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